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10/822,367

MMTC 04-1



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Sterzer et al.

Serial No.: 10/822,367

Filed: April 12, 2004

Title: INFLATABLE BALLOON CATHETER STRUCTURAL DESIGNS
AND METHODS FOR TREATING DISEASED TISSUE
OF A PATIENT

Art Unit: 3739

Examiner: Roy Dean Gibson

AMENDMENT

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-14501

Sir:

In response to the Office action of June 9, 2008, please amend this application in the manner set forth in the following attached pages in accordance with the format described in the "Revised Format of Amendments" Revised Notice of 2-13-03.

IN THE CLAIMS:

1 (cancel).

2 (cancel).

3 (cancel).

4 (currently amended). ~~The balloon catheter defined in Claim 3, wherein:~~

In a balloon catheter suitable for use in treating diseased tissue of a patient, wherein said balloon catheter comprises a catheter body, an inflatable balloon surrounding said catheter body, ~~an~~ a directional antenna, and a microwave feedline for forwarding microwave energy to said directional antenna, wherein in use (1) said catheter with said balloon in a deflated state may first be positioned so that said antenna is aligned with said patient's diseased tissue and (2) said balloon may then be inflated so that an exterior surface of said balloon presses said diseased tissue while said antenna transmits radiant energy to said diseased tissue thereby to effect the heating of said diseased tissue; ~~the improvement wherein:~~ both said microwave feedline and said antenna are being located entirely outside of said balloon with said antenna being longitudinally physically situated in cooperative relationship with said exterior surface of said balloon, thereby in use causing said inflated balloon pressing said diseased tissue to result in said antenna being in direct contact with irradiated tissue of said patient; ~~the improvement wherein:~~

said external directional antenna comprises a spiral microstrip structure.

5 (original). The balloon catheter defined in Claim 4, wherein said spiral microstrip structure comprises:

longitudinally-split plastic tubing having an inner longitudinal surface thereof enveloping said longitudinal external surface of said balloon with a metallic ground plane portion of said external directional antenna directly attached to said inner longitudinal surface of said tubing and a metallic spiral portion of said external directional antenna directly attached to an outer longitudinal surface of said tubing.

6 (cancel).

7 (currently amended). ~~The balloon catheter defined in Claim 6, wherein:~~

In a balloon catheter suitable for use in treating diseased tissue of a patient, wherein said balloon catheter comprises a catheter body, an inflatable balloon surrounding said catheter body, an omniirectional antenna, and a microwave feedline for forwarding microwave energy to said omniirectional antenna, wherein in use (1) said catheter with said balloon in a deflated state may first be positioned so that said antenna is aligned with said patient's diseased tissue and (2) said balloon may then be inflated so that an exterior surface of said balloon presses said diseased tissue while said antenna transmits radiant energy to said diseased tissue thereby to effect the heating of said diseased tissue,; the improvement wherein: both said microwave feedline and said antenna are being located entirely-outside of said balloon with said antenna being longitudinally physically situated in cooperative relationship with said exterior surface of said balloon, thereby in use causing said inflated balloon pressing said diseased tissue to result in said antenna being in direct contact with irradiated tissue of said patient. ; the improvement wherein:

said external omnidirectional antenna comprises a metallic helical structure surrounding said longitudinal external surface of said balloon.

8 (cancel),

9 ((cancel)).

10 (cancel).

11 (currently amended). ~~The system defined in Claim 9, wherein said system further comprises a radiometer, and wherein:~~

In a system suitable for use in heat treating diseased prostate tissue of a patient, wherein said system comprises a balloon catheter including a catheter body, an inflatable balloon surrounding said catheter body, and an antenna; wherein in use (1) said catheter with said balloon in a deflated state may first be inserted into an orifice of said patient and positioned so that said antenna is aligned with said patient's prostate tissue and (2) said balloon may then be inflated so that an exterior surface of said balloon presses against lining tissue of said orifice that is adjacent to said patient's prostate tissue, the improvement wherein:

said antenna is a directional antenna that (1) is longitudinally physically situated in cooperative relationship with said exterior surface of said balloon, thereby in use causing said inflated balloon pressing against said lining tissue of said orifice that is adjacent to said patient's prostate tissue, to result in said antenna being in direct contact with said lining tissue of said patient and (2) transmits radiant energy of a given frequency band to said diseased prostate tissue in response to power within said given frequency band being supplied to said antenna; and

a power source and means including a feedline, both said power source and said feedline being located entirely outside of said balloon for supplying a given amount of power within said given frequency band to said external directional antenna, thereby to irradiate said diseased tissue and thereby effect the heating to a given therapeutic temperature-;

the improvement wherein said means including a feedline further includes a single-pole two-position switch for forwarding said given amount of power within said given frequency band from said power source to said feedline when said single-pole two-position switch is in a first switch position thereof and for forwarding thermal radiation received by said external directional antenna and supplied to said feedline to said radiometer when said single-pole two-position switch is in a second switch position thereof;

whereby said radiometer provides a reading indicative of the temperature of said irradiated diseased tissue.

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12 (cancel).

13 (cancel).

14 ((cancel).

15 (cancel).

16 (cancel).

17 (cancel).